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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/677,875	10/02/2003	Katsumasa Yoshii	9281-4654	9827

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EXAMINER	
DI GRAZIO, JEANNE A	

ART UNIT	PAPER NUMBER
2871	

DATE MAILED: 05/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/677,875	YOSHII, KATSUMASA	
	Examiner	Art Unit	
	Jeanne A. Di Grazio	2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *10/2/2003*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Priority

Priority to Japanese Patent Application No. 2002-298596 (Oct. 11, 2002) is claimed.

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Preliminary Amendment

Applicant's Preliminary Amendment of October 2, 2003 is acknowledged.

Claim Objections

Claim 1 is objected to because of the following informalities:

As to claim 1, the limitation "irregular irregular surface" is objected to as unclear. The Examiner presumes that the "irregular irregular surface" is a minor error and that Applicant meant to recite instead "irregular surface."

Appropriate correction is **required**.

Claim 1 is objected to because of the following informalities:

As to claim 1, the limitation "a transparent resin or a transparent adhesive having fine particles dispersed therein" is unclear. The limitation is unclear because it is not clear as to what "fine particles dispersed therein" modifies. The fine particles may modify the transparent resin in which case the transparent resin has fine particles dispersed therein. Or, the fine particles may be

taken to modify the transparent adhesive in which it is the transparent adhesive (and not the transparent resin) that has the fine particles dispersed therein. If in fact both the transparent resin and the transparent adhesive have fine particles this is not readily apparent from the claim.

For examination purposes, the Examiner presumes that "fine particles dispersed therein" modifies only the transparent adhesive and that the transparent resin does not have fine particles dispersed therein.

Appropriate correction is **required**.

Claim 4 is objected to because of the following informalities:

As to claim 4, the limitation "irregular irregular surface" is objected to as unclear. The Examiner presumes that the "irregular irregular surface" is a minor error and that Applicant meant to recite instead "irregular surface."

Appropriate correction is **required**.

Claim 4 is objected to because of the following informalities:

As to claim 4, the limitation "a transparent resin or a transparent adhesive having fine particles dispersed therein" is unclear. The limitation is unclear because it is not clear as to what "fine particles dispersed therein" modifies. The fine particles may modify the transparent resin in which case the transparent resin has fine particles dispersed therein. Or, the fine particles may be taken to modify the transparent adhesive in which it is the transparent adhesive (and not the transparent resin) that has the fine particles dispersed therein. If in fact both the transparent resin and the transparent adhesive have fine particles this is not readily apparent from the claim.

For examination purposes, the Examiner presumes that "fine particles dispersed therein" modifies only the transparent adhesive and that the transparent resin does not have fine particles dispersed therein.

Appropriate correction is **required**.

Claim 5 is objected to because of the following informalities:

As to claim 5, the limitation "wherein the optical diffusion layer is arranged between the other substrate and the front light" is not clear. Applicant has not distinguished the substrates – both of the substrates have the same features. Usually, a distinction is made between a color filter substrate and TFT substrate in which case the placement of the optical diffusion layer would become clear.

For examination purposes, the limitation is presumed to read on the current art of record.

Appropriate correction is **required**.

Claim 6 is objected to because of the following informalities:

As to claim 6, the limitation "wherein the optical diffusion layer is deposited on the reflection substrate so as to form a reflector" is objected to. Technically, the diffusion layer does not form a reflector but rather serves to flatten out the roughness of the reflector.

Appropriate correction is **required**.

Claim 7 is objected to because of the following informalities:

As to claim 7, the limitation "wherein the optical diffusion layer is deposited on the reflection substrate so as to form a reflector" is objected to. Technically, the diffusion layer does not form a reflector but rather serves to flatten out the roughness of the reflector.

Appropriate correction is **required**.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 and 3 are rejected under 35 U.S.C. 102(b) as being anticipated by United States Patent 5,841,496 (to Itoh et al.).

As to claim 1, in one embodiment, Itoh features (Figures 15(a)-15(d)) a reflection substrate (31) on which is formed an aluminum reflecting layer (41) and an epoxy resin smooth layer (53) deposited on the reflection substrate (31) and aluminum reflecting layer (41)(Applicant's "an optical diffusion layer deposited on the reflection substrate") wherein the reflection substrate (See 31 and 41) is provided with a plurality of reflection inclined planes continuously formed on a surface thereof with a stripe geometry in plan view (the substrate and reflecting layer are saw-toothed – see Figures 15(a)-15(d)) and a surface of each reflection inclined plane is an irregular surface (Please note that the epoxy resin smooth layer (53) is

formed to eliminate heights and recesses on the reflection substrate)(Column 24, Lines 5-6)(explaining the purpose of the smooth layer).

As to claim 3, an inclined angle of the reflection inclined plane with respect to a surface of the reflection substrate is 20^0 (Column 23, Lines 19-20).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over United States Patent 5,841,496 (to Itoh et al.) in view of United States Patent 6,805,925 B2 (to Uchida et al.).

As to claim 2, Itoh does not appear to explicitly specify a haze of the optical diffusion layer of between 15% and 30%.

Uchida teaches and discloses transmittable light scattering sheets and teaches that if a haze value is too large, directionality of diffused light is deteriorated because of too much multiple scattering. If, on the other hand, the haze value is too small, incident light cannot be scattered sufficiently so that directionality of diffused light is insufficient (Column 7, Lines 65-67 and Column 8, Lines 1-13). Thus, according to Uchida, a haze value range of between 20 to 80% and more preferably 20-70% is preferred to achieve desired directionality of light.

Therefore, it would have been obvious to one of ordinary skill in the art of liquid crystals at the time the invention was made to modify Itoh in view of Uchida for desired directionality of light as noted.

Claims 4-7 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over United States Patent 5,841,496 (to Itoh et al.) in view of United States Patent 3,905,682 (to Meyerhofer).

As to claim 4, Itoh teaches and discloses with reference to Figure 1, a liquid crystal cell comprising substrates opposing each other (substrates 12 and 22) and a liquid crystal sandwiched (10) between the substrates (12 and 22), one substrate having an electrode (upper substrate 12, upper electrode 14) an alignment layer formed on the internal surface in that order from the one substrate (upper orientation layer 11) while the other substrate (lower substrate 22) has an electrode (lower electrode 24) and an alignment layer (lower orientation layer 21) formed on an internal surface in that order from the other substrate.

Itoh teaches both internal and external reflection substrates (31) (See Figures 1 and 2 for example).

Itoh features (Figures 15(a)-15(d)) a reflection substrate (31) on which is formed an aluminum reflecting layer (41) and an epoxy resin smooth layer (53) deposited on the reflection substrate (31) and aluminum reflecting layer (41)(Applicant's "an optical diffusion layer deposited on the reflection substrate") wherein the reflection substrate (See 31 and 41) is provided with a plurality of reflection inclined planes continuously formed on a surface thereof with a stripe geometry in plan view (the substrate and reflecting layer are saw-toothed – see Figures 15(a)-15(d)) and a surface of each reflection inclined plane is an irregular surface (Please

note that the epoxy resin smooth layer (53) is formed to eliminate heights and recesses on the reflection substrate)(Column 24, Lines 5-6)(explaining the purpose of the smooth layer).

Itoh notes that light regularly reflects towards the user from a light source positioned in front of the device (Column 2, Lines 64-67).

Itoh does not appear to explicitly specify a front light arranged adjacently to an external surface of the other substrate.

The Meyerhofer reference is directed to a liquid crystal device of improved contrast (Title, entire patent). Meyerhofer teaches that it is known that because liquid crystal material itself does not emit light, it must therefore be illuminated by a light source. In reflective displays, the device is illuminated from its front side so that light incident on a reflector can be used to increase display brightness (Column 1, Lines 6-16).

Therefore it would have been obvious to one of ordinary skill in the art of liquid crystal display devices at the time the invention was made to modify Itoh in view of Meyerhofer to include a front light so that brightness can be enhanced.

As to claims 5-7, Itoh features internal and external locations for the reflection substrate as in Figures 1 and 2 for example.

As to claim 9, an inclined angle of the reflection inclined plane with respect to a surface of the reflection substrate is 20^0 (Itoh Column 23, Lines 19-20).

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over United States Patent 5,841,496 (to Itoh et al.) in view of United States Patent 3,905,682 (to Meyerhofer) and further in view of United States Patent 6,805,925 B2 (to Uchida et al.).

As to claim 8, Itoh does not appear to explicitly specify a haze of the optical diffusion layer of between 15% and 30%.

Uchida teaches and discloses transmittable light scattering sheets and teaches that if a haze value is too large, directionality of diffused light is deteriorated because of too much multiple scattering. If, on the other hand, the haze value is too small, incident light cannot be scattered sufficiently so that directionality of diffused light is insufficient (Column 7, Lines 65-67 and Column 8, Lines 1-13). Thus, according to Uchida, a haze value range of between 20 to 80% and more preferably 20-70% is preferred to achieve desired directionality of light.

Therefore, it would have been obvious to one of ordinary skill in the art of liquid crystals at the time the invention was made to modify Itoh in view of Uchida for desired directionality of light as noted.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeanne A. Di Grazio whose telephone number is (571)272-2289. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim, can be reached on (571)272-2293. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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JDG

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